

REMARKS

Claims 1-30 are pending in this application. The Specification has been amended to correct a typographical error in a reference cited therein. In addition, Applicants have amended certain claims in this Response because Applicants believe these amendments serve a useful clarification purpose, and are desirable for clarification purposes, independent of patentability. Accordingly, Applicants respectfully submit that the claim amendments do not limit the range of any permissible equivalents.

In particular, claims 12 and 26 have been rewritten to remove language of concern to the Examiner. In addition, independent claims 1 and 15 have been rewritten to clarify that the composition of the present invention is homogeneous. Also, claim 29 has been rewritten to correct a typographical error. As no new matter has been added by the amendments herein, Applicants respectfully request entry of these amendments at this time.

Brief Description of the Present Invention

The present invention provides a composition for use in golf ball cores, which is a blend of at least one high Vicat softening thermoplastic and at least one elastomer, that has increased geometric stability without substantially affecting the desired golf ball properties. *See, e.g.,* Specification at Page 3, lines 26-32.

Conventional methods for preparing golf ball cores, *i.e.*, mixing components at about 80°C to form a composition that is milled, hand prepped, or extruded, into pieces suitable for molding, is not suitable for the incorporation of the high Vicat softening thermoplastics of the present invention. *See, e.g.,* Page 19, lines 15-27. The conventional methods (including those described in the cited references) are unsuitable for use with the present invention because the temperature at which the composition would be mixed is too low to allow adequate homogenation of the composition. *Id.* As discussed in the Specification, simply raising the mixing temperature (as done in the cited references) does not solve the problem, but instead creates another: prematurely activating the free-radical initiators that may be present in the core compositions. *See, e.g.,* Page 19, lines 27-29.

Here, the compositions are different from the cited references because they are homogeneous. In addition, the claimed invention involves separate, and essential, heating and cooling steps. For example, the high Vicat softening thermoplastics are first heated and mixed with the rubber, mixed until homogeneous, and then cooled to a temperature at which the desired cross-linking agent and free radical initiator will be substantially inactive. *See, e.g.,* Specification at Page 20, lines 1-9 and 18-27.

THE REJECTION UNDER 35 U.S.C. § 112

The Examiner rejected claims 12 and 26 under 35 U.S.C. § 112, second paragraph, as being indefinite. In response, claims 12 and 26 have been rewritten to remove “such as nylons”. Therefore, Applicants respectfully submit that this rejection has been overcome.

THE REJECTIONS UNDER 35 U.S.C. §§ 102 and 103

Claims 1-2, 5-7, 10-14, and 29 were rejected under 35 U.S.C. § 102(e) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over U.S. Patent No. 5,833,553 to Sullivan *et al.* or as set forth on page 3 of the Office Action. In addition, claims 1-2, 5-7, 10, 12-14, and 29 were rejected under 35 U.S.C. § 102(e) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over U.S. Patent No. 5,895,105 to Nesbitt as set forth on page 3 of the Office Action. Moreover, claims 1-2, 5-7, 10-15, 18-21, and 24-29 were rejected under 35 U.S.C. § 102(e) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over U.S. Patent No. 5,779,562 to Melvin *et al.* as set forth on page 3 of the Office Action. Finally, the Examiner rejected claims 8-9 and 22-23 under 35 U.S.C. § 102(e) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over U.S. Patent No. 6,431,999 to Nesbitt as set forth on page 4 of the Office Action.

All of the cited references contain almost identical disclosures with regard to a method of mixing polypropylene with a rubber-based elastomer to form a core composition below the melting temperature of polypropylene. This teaching prevents formation of a homogeneous mixture. A more detailed explanation with respect to each reference is provided below; however, all of the cited references have a common theme: the method disclosed would not result in the homogeneous composition presently claimed. Also, all of the references are missing the element of cooling in method claim 29. This non-conventional step would not have been obvious at the time of invention.

Sullivan ‘553 Does Not Disclose or Suggest the Present Invention

Sullivan ‘553 generally discloses core compositions that contain base elastomers, such as polybutadiene, a metallic salt of an unsaturated carboxylic acid, and a free radical initiator. *See, e.g.*, Col. 7, line 63 to Col. 8, line 3. The Sullivan ‘553 core compositions may contain particulate polypropylene resin to adjust the weight of the ball as necessary. While Sullivan ‘553 teaches to mix the core ingredients until the composition is uniform (Col. 8, lines 14-19), those of ordinary skill in the art are aware that the method of mixing the

polypropylene resin with the other ingredients would not result in the homogeneous composition presently claimed.

Instead, because the melting temperature of polypropylene (~160°C – 170°C) is higher than the mixing temperature (200°F) in Sullivan '553, the polypropylene would not become part of the polymer backbone. In fact, the polypropylene resin used in the Sullivan '553 patent would be dispersed in the matrix in a random domain (like powder pellets) and would actually be visible in the resulting composition. Thus, the compositions in Sullivan '553 cannot be considered homogeneous, as presently recited in independent claims 1 and 29.

With regard to independent method claim 29, the Sullivan '553 patent is completely silent on the two-phase process presently recited. For example, Sullivan '553 teaches blending of the elastomer and polypropylene resin, wherein the temperature rises to about 200°F as a result of the shear mixing, followed by the addition of the initiator and diisocyanate until the temperature that occurs at about 220°F. *See* Col. 8, lines 22-32. However, Sullivan '553 does not disclose or even suggest the interim step of cooling the mixture before adding the additional ingredients, as presently recited in claim 29. And, one of ordinary skill in the art would not have been motivated to add this cooling step to the Sullivan '553 process as its teachings suggest to continue to raise the temperature along the elevated path begun by the shear mixing of the first ingredients. There is nothing in Sullivan '553 to even suggest an interruption of this continued temperature elevation during the mixing process.

Thus, Applicants respectfully submit that Sullivan '553 does not anticipate or render obvious the present invention. Thus, Applicants respectfully request reconsideration and withdrawal of the rejection based thereon.

Nesbitt '105 Does Not Anticipate or Render Obvious the Present Invention

Like Sullivan '553, Nesbitt '105 also uses a mixing process that would not result in the homogeneous composition presently recited. In fact, Nesbitt '105 contains the same disclosure as Sullivan '553 with regard to the mixing process, *i.e.*, the mixing is conducted at a temperature lower than the polypropylene melting temperature (Col. 7, lines 38-47) and also conducted so that polymerization does not occur (Col. 7, lines 56-58). For the same reasons as previously discussed with regard to Sullivan '553, any polypropylene resin added to the Nesbitt '105 base elastomer would not become part of the polymer backbone because the mixing temperature is below that of the polypropylene melting temperature. Thus, the

resulting composition would not be homogeneous. In fact, the particulate polypropylene would be visible in the resulting composition.

Furthermore, Nesbitt '105 does not even suggest a cooling step prior to the addition of the initiator. *See, e.g.*, Col. 7, lines 38-47. In fact, like Sullivan '553, the Nesbitt '105 process teaches to continue to raise the mixture temperature as more ingredients are added with no suggestion of a cooling step therebetween. Therefore, a skilled artisan would have lacked any motivation to insert a cooling step without the present invention to use as a template, which is a classic case of impermissible hindsight.

For the reasons above, Nesbitt '105 does not disclose or suggest the present invention. Therefore, Applicants respectfully request that the §§ 102 and 103 rejections based thereon be reconsidered and withdrawn.

Melvin '562 Does Not Disclose or Suggest the Present Invention

Melvin '562 also teaches the same process for mixing as discussed above with respect to Sullivan '553 and Nesbitt '105. *See, e.g.*, Col. 9, lines 55-67. Thus, the incorporation of the polypropylene resin, as taught by Sullivan '553, Nesbitt '105, and Melvin '562, would not result in the homogeneous composition presently recited in independent claims 1, 15, and 29 because the mixing temperature is lower than the polypropylene melting temperature. In addition, the mixing process taught by Melvin '562 does not anticipate independent method claim 29 because Melvin '562 is completely silent as to a cooling step, as presently recited in claim 29. One of ordinary skill in the art would not have been motivated to introduce a cooling step into the mixing process taught by Melvin '562, as Melvin '562 teaches to continually elevate the temperature during the mixing process. *See, e.g.*, Col. 9, lines 55-67.

For these reasons, Melvin '562 does not disclose or suggest the present invention. Therefore, Applicants respectfully request that the rejection based thereon be reconsidered and withdrawn.

Nesbitt '999 Does Not Anticipate or Render Obvious the Present Invention

Claims 8-9 and 22-23 were rejected under 35 U.S.C. § 102(e) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over U.S. Patent No. 6,431,999 to Nesbitt as set forth on page 4 of the Office Action. For the reasons discussed above, independent claims 1 and 15 are not disclosed or even suggested in Sullivan '553, Nesbitt '105, or Melvin '562. Likewise, Nesbitt '999 also does anticipate or render obvious the present homogeneous core composition recited in claims 1 and 15. Therefore, regardless of

the cover materials taught by Nesbitt '999, the core composition and method of forming the core composition is not disclosed or suggested by any of the cited references, including Nesbitt '999.

As discussed above, Nesbitt '999 contains a very similar method of mixing a rubber-based elastomeric core composition involving steps that would not lead to a homogeneous mixture as presently claimed. *See, e.g.*, Col. 25, lines 29-42. For example, the addition of polypropylene is not conducted in such a way as to incorporate the polypropylene into the backbone of the polymer, but instead the mixing is conducted at a temperature below the polypropylene melting temperature and below incipient polymerization temperatures (Col. 5, lines 36-38). As known to those of ordinary skill in the art, the Nesbitt '999 method would result in a composition in which the polypropylene would act more as a powder filler, *i.e.*, visible in pellet form within the core composition.

In addition, Nesbitt '999 does not even suggest the cooling step during mixing, as presently recited in independent method claim 29. *Id.* For similar reasons as discussed above, one of ordinary skill in the art would have lacked any motivation to depart from the mixing process taught by Nesbitt '999 without the impermissible use of hindsight.

Thus, Nesbitt '999 also does not disclose or suggest the homogeneous composition of the present invention and, therefore, also does not disclose or suggest the claimed subject matter depending therefrom. Thus, Applicants respectfully request reconsideration and withdrawal of the rejection based thereon.

THE DOUBLE PATENTING REJECTION

The Examiner rejected claims 1-7, 10-21, and 24-30 for non-statutory double patenting over claims 1-34 of U.S. Patent No. 6,284,840 to Rajagopalan *et al.* Applicant submits herewith a Terminal Disclaimer in compliance with 37 CFR 1.321(c). In light of the Terminal Disclaimer, Applicant respectfully submits that this rejection has been overcome and requests withdrawal thereof.

**REVOCATION AND POWER OF ATTORNEY
AND ATTORNEY DOCKET NUMBER**

Applicant submits herewith a Revocation and Power of Attorney indicating the change in representation and attorney docket number for this case. Therefore, Applicant respectfully requests that all correspondence be directed to the undersigned and that the attorney docket number be changed from 174-983 to 20002.0101.

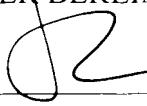
CONCLUSION

All claims are believed to be in condition for allowance. If the Examiner believes that the present amendments still do not resolve all of the issues regarding patentability of the pending claims, Applicants invite the Examiner to contact the undersigned attorneys to discuss any remaining issues.

A Petition for Extension of Time is submitted herewith to extend the time for response one month to and including March 17, 2003, since the due date of March 15, 2003 falls on a Saturday. In addition, a Fee Sheet Transmittal is submitted to pay for the Information Disclosure Statement and Terminal Disclaimer filed concurrently herewith. No other fees are believed to be due at this time. Should any fee be required, however, please charge such fee to Swidler Berlin Shreff Friedman, LLP Deposit Account No. 195127, Order No. 20002.0101.

Respectfully submitted,

SWIDLER BERLIN SHREFF FRIEDMAN, LLP

By: 

Dated: March 17, 2003

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APPENDIX A
MARKED UP VERSION OF THE AMENDED SPECIFICATION PARAGRAPH

Please replace the paragraph found at page 18, line 32 to page 19, line 2 with the following:

The manner in which the ionomers are made is well known in the art, as described in, e.g., U.S. Patent No. [3,262,272] 3,264,272, which is incorporated in its entirety by reference herein. Such ionomer resins are commercially available from DuPont under the tradename SURLYN® and from Exxon under the tradename IOTEK®. Some particularly suitable SURLYNS® include SURLYN® 8140 (Na) and SURLYN® 8546 (Li), which have [an] a methacrylic acid content of about 19 percent.

APPENDIX B
MARKED UP VERSION OF THE AMENDED CLAIMS

Please amend the claims as follows:

1. (Amended) A golf ball comprising:
 - a core, wherein the core comprises at least one layer formed of a composition comprising at least one rubber, a metal salt of an α,β -unsaturated acid, an initiator, and at least one thermoplastic material having a Vicat-softening temperature of at least about 38° C; and
 - an inner cover disposed about the core; and an outer cover disposed about the inner cover.
12. (Amended) The golf ball of claim 1, wherein the inner cover comprises at least one material selected from the group consisting of ionomers, thermoplastic or thermoset polyurethanes, polyetheresters, polyetheramides, or polyesters, dynamically vulcanized elastomers, functionalized styrene-butadiene elastomers, metallocene polymers, polyamides [such as nylons], acrylonitrile butadiene-styrene copolymers (ABS), and blends thereof.
15. (Amended) A golf ball comprising:
 - a core comprising at least two layers, wherein at least one of the core layers is formed of a composition comprising at least one rubber, a metal salt of an α,β -unsaturated acid, an initiator, and at least one thermoplastic material having a Vicat-softening temperature of at least about 38°C; and
 - an inner cover disposed about the core; and an outer cover disposed about the inner cover.
26. (Amended) The golf ball of claim 15, wherein the inner cover comprises at least one material selected from the group consisting of ionomers, thermoplastic or thermoset polyurethanes, polyetheresters, polyetheramides, or polyesters, dynamically vulcanized elastomers, functionalized styrene-butadiene elastomers, metallocene polymers, polyamides [such as nylons], acrylonitrile butadiene-styrene copolymers (ABS), and blends thereof.
29. (Amended) A method of forming a golf ball comprising:

forming a first mixture comprising at least one rubber and at least one thermoplastic material;

mixing said first mixture at a first temperature sufficient to allow substantially homogeneous mixing of said first mixture;

cooling said first mixture to a second temperature;

forming a second mixture by adding the first mixture to a free-radical initiator having an activation temperature at a temperature above the second temperature; [and]

shaping and heating the second mixture to at least the activation temperature to crosslink the second mixture so as to form a portion of a golf ball core;

forming an inner cover disposed about the golf ball core; and

forming an outer cover thereon.